

WEST VIRGINIA DEPARTMENT OF AGRICULTURE

PLANT PEST CONTROL DIVISION

ANNUAL REPORT

1969-1970

ALBERT E. COLE, DIRECTOR

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#### Introduction

The major portion of the activities of this Division are authorized by the Plant Pest Act and the Rules and Regulations authorized by the Act. Quarantines and surveys are made as authorized and required by this Act, which was passed by the Legislature in 1967.

This activity is authorized to perform the three primary functions of Regulation, Survey and Control in accomplishing our objective of protecting the agricultural, horticultural and forestry interests of the State from destructive plant pests.

In addition to the Plant Pest Law we enforce the West Virginia Apiary Law of 1969 which became effective June 4, 1969.

The Division maintains headquarters in the East Wing of the State Capitol and has permanent field offices in Greenbank, Pipestem and Union. During the summer months six field offices in various parts of the State are used to control the Oak Wilt Program work.

Much of the work of this Division is done in cooperation with the United States Department of Agriculture, Agricultural Research Service and the Forest Service. Formal agreements with both of these organizations decide the nature of the work.

This Division is organized as follows:

Division Director.....Albert E. Cole  
Assistant Director &  
Oak Wilt Chief.....R. Rex Jones  
Administrative Assistant.....Sally Atkins  
Secretary.....Shirley Hooker  
Forest Insect & Disease Entomologist.....Alan Miller  
Survey Entomologist.....Jan D. Hacker  
Nursery Inspector.....Jerry Atkins  
State Apiarist.....Earl P. Cochran  
Project Leader Forest Insect & Disease.....Jim Brooks  
Project Leader Barberry Eradication.....Vernon E. Bostic  
Project Leader White Pine Blister Rust.....Delbert Gillispie  
Project Leader.....Bob Frame  
Asst. Project Leader Barberry Eradication...Robert Clarkson  
Asst. Project Leader White Pine Blister Rust..Dana Keaton  
Assistant Project Leader.....Bruce Given

In addition to the above permanent employees approximately 85 part-time employees are utilized during the summer months in the Oak Wilt Program, Bee Inspection, laboratory and office.

The program reports that follow summarize the regular work of the Division. We also assist the citizens of W. Va. in solving their plant pest problems by making personal visits, answering phone calls, writing bulletins, news releases and through public appearances on radio and television, speaking to school groups and civic organizations, attending fairs and providing display material and participation in two youth camps.

## APIARY INSPECTION

Two part-time summer employees, two part-time bee inspectors who are also permanent Department employees, and the State Apiarist began the enormous task of inspecting the bee colonies of W. Va. on July 1, 1969. This inspection program has as its goal the control of the contagious bacterial disease of the honey bee brood called American Foulbrood. European Foulbrood, Sac brood and Nosema are also detected thru inspection. To properly inspect bees for disease it is necessary that they be housed in hives with movable frames. Emphasis is therefore placed on the transferring of bees from box hives to modern equipment in accordance with the law. This year 673 colonies were found to be housed in box hives and the owners have either transferred them or they have been given one year to make this transfer. When modern equipment is used bees are not only able to be properly inspected but the beekeeper is able to recover as much as 100 times the amount of honey that can be taken from some box hives.

The new bee law requires keepers of bees to register each hive with the W. Va. Department of Agriculture. To this end in 1969-1970 some 988 persons have registered 12,249 colonies of bees.

The inspection program for 1969-70 resulted in 8,987 colonies of bees being examined. Of this number 96 were found to be infected with American Foulbrood and destroyed. This represents an infection rate of 1.06 percent. European Foulbrood was in seven colonies and 15 were found to be infected with other bee diseases or pests. In fiscal year 1969 only 2,000 colonies were inspected under the old law.

As charged by the new Bee Law, schools on beginning beekeeping were conducted in five counties of the State and were well attended. The State Apiarist appeared on television seven times, displayed material at four fairs and visited four Vo-Ag classes to discuss beekeeping. A newsletter to beekeepers is published each month and is mailed to over 1,500 persons.

## BARBERRY ERADICATION

(State-Federal Cooperative)

The purpose of the barberry eradication program is to eliminate the alternate host of the fungus organism (Puccinia graminis) which causes stem rust of wheat, other small grains, and grasses.

In West Virginia the primary alternate host plant is Berberis canadensis, the native barberry. The European barberry, Berberis vulgaris, is also an alternate host plant along with several exotic or hybrid forms of barberry occasionally found in nurseries or home plantings.

Rust growing on green stems, and leaves of wheat or other host plants uses water and food needed by the plant to produce grain kernels. Stem rust can reduce yields by as much as 90 percent and has caused loss of as much as 200 million bushels in a single year.

Control programs for this disease were begun in 1935 and have been continuous since that time. This year 2,830,600 barberry bushes were eradicated from 26,240 acres by State and Federal workers. This control work not only helps control the current season infection rate of West Virginia grains and grasses, but more importantly, it reduces the possibility of gene recombination

of the rust organism and thus protects the entire grain industry from new and perhaps more virulent races of the fungus.

## COOPERATIVE ECONOMIC INSECT SURVEY

(Federal-State Cooperative)

This program, in cooperation with the United States Department of Agriculture, has as its objective the following:

1. To assist farmers and agricultural workers to protect crops by supplying current information on insect activity.
2. To aid manufacturers and suppliers of insecticides and equipment to determine where supplies are needed.
3. To aid prompt detection of newly introduced insects.
4. To develop a workable insect pest forecasting service.
5. To develop nationwide uniformity in reporting insect conditions.
6. To determine losses by insects.
7. To maintain records on occurrence of domestic and foreign economic pests.
8. To assist with a nationwide organization for biological warfare defense as it relates to insects.
9. To assist in developing uniform survey methods.

The West Virginia University is not a formal participant in this program, however Mr. David Quinn, W. Va. University Extension Specialist and Pesticide Coordinator is a member of the planning committee required by the formal agreement with the USDA. In addition members of the Entomology Department are cooperating in certain aspects of survey.



The survey Entomologist, Mr. J. D. Hacker, made surveys for non-program agricultural pests in all areas of the State and made weekly reports to the USDA on his observations. He appeared on radio and television and visited numerous schools to discuss insects and entomology.

Approximately 300 persons submitted insect specimens for identification. Many of these were received as the result of the Pest Identification Laboratory operated in cooperation with Dr. John F. Baniecki, Extension Specialist, W. Va. University Extension Service, Pathology and Entomology.

The insect collection, an additional responsibility of the Survey Entomologist, is being built up and maintained as a reference insect collection to be used by the W. Va. Department of Agriculture as well as by any qualified student or professional. There are now approximately 600 species of insects in the adult collection and 200 species of insects in the immature collection. A card file is being maintained to document the occurrence of insects in West Virginia and is designed to someday be a complete record of the known insect fauna of West Virginia.

In cooperation with the W. Va. University Extension Service a Pest Identification Clinic was held in Wheeling, West Virginia in August 1969. Specialists from the University and the Plant Pest Control Division were available at Oglebay Park to meet with any citizen to identify and discuss pest control problems. The reception of this new approach to service was so heartening that three such Clinics are planned for 1970.

## FOREST INSECT AND DISEASE SURVEY

(Federal-State Cooperative)

This program, in cooperation with the United States Forest Service and the W. Va. Department of Natural Resources, provides for forestry interests what the cooperative Economic Insect Survey does for agriculture.

One Entomologist, one Project Leader and one part-time Plant Pathologist are employed for this program. In addition, the Service Foresters of the Department of Natural Resources make continual observations in their own areas and report to the Division on insect and plant disease conditions. These observations along with the Entomologists findings are compiled into a Newsletter which is distributed to all foresters and others interested in the subject.

Surveillance for all forest pests is a continuing project. Specific surveys made during F. Y. 1970 included the early spring egg surveys for the Oak leaf tier complex of insects, the Forest and Eastern tent caterpillars, and the Virginia pine sawfly. Summer surveys were also made to gather information on the damage done by these pests. The Periodical cicada brood that emerged in May was mapped and specimens were collected to document the occurrence and to send to the U. S. National Museum for a research project.

Several projects involving plant diseases are being conducted by Dr. Amos who is employed part-time as the Forest Pathologist. These include the diseases of red spruce and yellow poplar and a project to establish definite guidelines for the utilization of fire damaged timber trees.



The Forest Entomologist, Mr. Alan Miller, has appeared on radio and TV, has spoken to school groups and participated in such activities as the Wildflower pilgrimages. He coordinates our participation in the annual W. Va. Forest Festival and is a member of several professional foresters organizations.

#### GYPSY MOTH SURVEY

(Federal-State Cooperative)

Along with the USDA, ARS, Plant Protection Division, five part time summer employees (2 State-3 Federal) under the direct supervision of a USDA Supervisor had approximately 2,400 "Dixie Cup" type traps in place before the end of June 1970. Another 600 traps were placed, and are being maintained, by regular Division personnel in addition to their other duties. These traps, using a female moth sex lure to attract the flying male insects, have been placed in the northern and eastern counties of the State. In 1969 (July-August) approximately 2,400 traps were used with negative results.

Gypsy moth, potentially the most serious insect pest to threaten W. Va.'s forests, has continued to spread from the New England States southward until they are now found in all of New Jersey, practically all of the eastern half of Pennsylvania and for the first time last year, Gypsy moths were recovered in Virginia and in Delaware.

To date no Gypsy moths have been found in West Virginia.

## JAPANESE BEETLE

(Federal-State Cooperative)

Japanese beetles may be found in almost all of West Virginia and, for that reason, all of the State is regulated by the Federal Japanese Beetle Quarantine. Soil and certain plant material being shipped from West Virginia to areas free of the beetle must be certified to be free of any life stage of the insect. Treatment is usually required. In the case of nurseries this treatment, under supervision, can be made to the stock in the field and certified. Other means are: the dipping of plants in an insecticidal solution; washing roots free of soil; or, in the case of fruits and vegetables, a visual inspection is made to insure freedom from the pest.

The Milky White Disease control program is continuing with 750 pounds of spore dust being applied in Fayetteville this spring. This Division contributed 100 pounds of this amount along with equipment and personnel. Last fall the Division supplied about 25 pounds of spore dust to St. Albans Boy Scouts and supervised the treatment of a public park area. We supplied 20 pounds to a Charleston South Hills residential community, who provided the labor to apply the dust under our supervision. Plans are being made with other communities, particularly in the Kanawha Valley, to cooperatively treat the sod areas of their towns.

Tiphia vernalis, a parasitic wasp of the beetle, was observed in Taylor, Randolph and Wood Counties but not in sufficient numbers to collect for redistribution and possible colony establishment.

Limited time and personnel were available for this survey when the adult wasps were flying. Hopefully next spring a more complete survey can be made and, if the insect is found in collectable numbers, additional colonies can be established in the State.

#### NURSERY INSPECTION

The Plant Pest Act authorizes and requires all nurseries, nursery dealers and agents to register with the W. Va. Department of Agriculture. In fiscal year 1970 there were 208 nurseries, 275 nursery dealers and 67 agents registered.

The Act further requires that these nurseries be inspected to ascertain the presence of injurious insects or plant diseases. When found, quarantines are imposed and methods of control are supplied to the grower. All dealers are visited at least once each year to check the plant material they are receiving and selling. Nursery stock growing on approximately 1,700 acres was inspected and over 330 visits were made to nursery dealers and Christmas tree lots in fiscal year 1970.

The Act also requires out-of-state concerns to register with the Department if they intend to ship nursery stock into W. Va. In fiscal year 1970, 774 out-of-state nurseries or nursery dealers were registered. Reciprocal agreements with the various States makes it possible for these concerns to register without paying the normal registration fee.

The most common nursery pests observed this year were the scale insects, mites, bagworms, leaf miners and tip moths. Roses with stem cankers were found during the spring dealer inspection.

Also many plants were found to be unfit for sale due to lack of proper care.

Jerry Atkins, a recent graduate of W. Va. University with a degree in forestry, was hired in June to work as a full time Nursery Inspector.

A newsletter is published each month and distributed to the nurseries, dealers and other interested parties such as the County Extension Agents. Personnel of the Division participated in all meetings of the W. Va. Nurserymen's Association.

#### OAK WILT

(Federal-State Cooperative)

In cooperation with the U. S. Forest Service, detection and control of Oak Wilt is the largest single program of the Division. Observers in low flying aircraft detect the diseased trees after which ground crews do the necessary control work. It has been reliably predicted that failure to carry out a program such as this would result in the loss of most of the valuable oak species in the State in less than 100 years.

#### DETECTION AND CONTROL:

The 1969-70 Oak Wilt Program was actively underway when the fiscal year began on July 1, 1969. Active field work was terminated on September 12, 1969 and resumed on June 1, 1970. The organization and management of the program followed the pattern established in past years. The State was divided into six districts for administrative purposes, with headquarters located in Romney, Morgantown, Fayetteville, Charleston, Logan and

Parkersburg. A district leader was assigned to each and at the peak of the season a total of 86 men were employed. Each district having one or two observers and from one to twelve two-men ground crews.

A total of eight airplanes were contracted to carry out the aerial survey work. Aerial observers in these low flying airplanes located the diseased tree suspects and plotted them on topographic quadrangle maps. Ground crews then checked the suspects and, if the aerial diagnosis was verified, the diseased trees were treated by the deep-girdle method. (Diseased trees located in the check plot research areas were not girdled).

Diseased trees were located in 38 of the State's 55 counties, and the disease was not found in any of the four counties - Brooke, Ohio, Tucker and Webster - in which it had never been found before.

During the fiscal year a total of 3,105 trees were located in 2,358 infection centers. Red, black and scarlet oak comprised 97.8 percent of the trees processed. The high concentration areas were in the northeastern counties - Hampshire, Mineral, Hardy and Pendleton - and the southwestern counties - Wayne, Boone and Mingo.

#### RESEARCH:

A new study, which is being carried out in cooperation with the U. S. Forest Service, is being continued and two new quadrangles were added to the study as of June 15, 1970. This study, Modified Control Appraisal (MCA), is designed to supplement the overall appraisal of the control program, including its effect on



long distance disease spread. Planned for a duration of three years, MCA may be extended for two additional years, if necessary. This schedule is subject to annual reviews and may be revised if results so dictate.

Additional activities include assisting Charles Rexrode, Entomologist, stationed at the Delaware, Ohio Experimental Station, in locating and cutting diseased oak trees for oak bark beetle studies. These studies are being made to determine the role of oak bark beetles as vectors of oak wilt.

#### PROBLEMS:

During the latter part of the summer of 1969 several flying days were lost due to inclement weather. This time loss hampered effective aerial coverage in many areas of the State. During the early summer of 1970 late frost, cicada damage and forest tent caterpillar defoliation hampered effective aerial coverage in many areas of the State.

#### POTATO WART

(Federal-State Cooperative)

This program, designed to detect and eradicate the disease of potatoes known as Potato Wart, is carried out in cooperation with the W. Va. University, Plant Pathology Department and the USDA, ARS.

Potato wart disease is caused by a fungus, Synchytrium endobioticum, and is believed to be eradicated from all parts of the United States except for a small area in and near the town of Thomas in Tucker County.



In September of 1969 the garden plots that had been planted with wart susceptible potatoes in the spring were dug and the potatoes carefully examined. Wart infected potatoes were found in the largest (0.4 Acres) planting. By the end of October that field had been treated with approximately 1,000 pounds of copper sulfate. In the late spring of 1970 fourteen plots totaling about one acre were planted with wart susceptible potatoes and will be maintained in an approved manner until dug in September. Two fields that had had wart in 1967 and 1968, and had been treated to destroy the organism, are being planted in potatoes each year to check the effectiveness of the treatment. The plot treated in 1969 will be limed this fall and planted next year. Three wart free years are required before the disease can be said to be eradicated. For that reason some work on this project will continue until at least 1973.

#### WHITE PINE BLISTER RUST

(Federal-State Cooperative)

In cooperation with the United States Forest Service the Division conducts this program, which has as its objective the protection of white pine trees from the serious disease known as White Pine Blister Rust (Cronartium ribicola).

Operating from headquarters in Greenbank, W. Va. and in Pipestem, W. Va., valuable white pine in Grant, Hampshire, Hardy, Pendleton, Preston, Greenbrier, Pocahontas, Tucker, Mercer, Monroe, Raleigh, and Summers Counties are protected from this disease by eradicating gooseberries and currants (Ribes sp.) which are the alternate hosts of the fungus. Over one half

million acres of State and Private lands as well as the Monongahela National Forest land are within the "control area" and are capable of growing valuable white pine which would be subject to attack by the Blister Rust Disease. White pine now grows on about 1/4 million of these acres.

In fiscal year 1970, 24,935 Ribes bushes were destroyed in areas where the amount and quality of the White Pine justified the work. The area involved in this years work totaled 8,083 acres. An additional acreage totalling nearly 150,000 acres were surveyed for Ribes, the blister rust disease, or for the quantity and quality of the White pine trees in the areas.

One project supervisor, Delbert Gillispie, an assistant project supervisor and 12 workers combine to make up the staff for the program. Six of the workers work only during the summer months.

An evaluation survey was begun during the last month of the fiscal year under the aegis of the U. S. Forest Service. This survey will be concluded in July 1970 and is intended to show the effects of the program and to provide a basis for deciding the future course of the program.

Blister Rust disease is still present in the area being worked, however the methods and time involved in this program have resulted in over 95 percent of the total pine acreage being on a maintenance basis, which means that they are substantially free of the disease.

## MISCELLANEOUS SURVEYS

(In Cooperation with USDA, ARS)

### Cereal Leaf Beetle

This insect is known to occur in 43 of the States 55 Counties. Surveys made in the 12 counties where the insect had not been found previously were negative.

### European Chafer

This insect was found in W. Va. in 1955. In 1955 and 1956 a control program was carried out and the insect has not been recovered since. In the summer of 1969 black light traps and visual observations were made throughout the areas most likely to have a new infestation with negative results.

### White Fringe Beetle

Surveys made by State and Federal personnel were negative.

### Witchweed

Federal personnel conducted a survey for this agricultural pest with negative results.

### Golden Nematode

One grower in W. Va. is known to have received seed potatoes from an area in New York known to be infested with serious pest. A soil sampling survey made in F.Y. 1969 was negative. Since the pest, when present, requires several years to become well enough established to be detectable, no work was done in F.Y. 1970. Federal employees made checks for quarantine compliance.